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ABSTRACT

The Fry Readability Formula was used to investigate the readability levels of stories contained in basal readers of the 1979 edition of the "Open Court" series for grades one through six. The average readability levels of the stories were then compared to those found in the 1976 edition of the same series. The purposes of the study were to determine whether there were variations within and between the basals in the 1979 edition and between the 1979 and 1976 editions. The results showed that the readability levels for stories in the primary grade basal readers were consistently above the publisher grade designations. The comparison of the 1976 and 1979 editions revealed that the publisher did not change the stories in the primary grade books or lower their difficulty levels. It appeared, however, that the publisher did make some effort to lower the readability levels of the middle grade books. (FL)

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THE READABILITY LEVELS OF THE 1979 OPEN COURT BASALS AND THEIR COMPARISON WITH THE 1976 EDITION

by

Emily Eisen

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The goal of reading is comprehension, but we cannot comprehend material written above our reading level. Children often turn away from reading because the story contains words that are too hard. They are so busy decoding that there is nothing left for understanding. The continuity of the story is destroyed by the need to stop and decode words that are too complex for them resulting in a feeling of frustration. On the other hand, children can turn away from reading easy books if they are boring. They must match the interest level of the student reading them if they are to be of any value. A poor reader might "stick with it" in trying to master difficult material if the topic holds his/her interest. According to Fry (1975), "high motivation overcomes high readability level, but low motivation demands a low readability level."

Reading materials must match the pupils for whom they are intended. Understanding concepts presented, idiomatic expressions, multiple contextual meanings of words, interest of the child and motivation are just some of the factors that contribute to the level of difficulty of the reading matter. The degree of difficulty varies from child to child for each indicator. Currently used readability formulas do not reflect these factors (Spache, 1970). They do provide a practical estimate of the reading ability necessary for use of a book (Spache, 1968), and help provide information that may be significant in dealing with poor readers. Knowing the

readability levels of the texts can help alleviate some of the problems caused by the mismatch of pupil and reader.

A recent study designed to discover what teachers know about the readability of their basals (Eberwein, 1979) disclosed that teachers assume that there is little variability in the readability levels of a basal, yet it was found that there was a great deal of variation in readability levels in the three reading series evaluated. It further revealed that teachers were quite surprised and were eager to use this new knowledge to help students with difficult parts. In their ignorance, teachers were asking students to read passages too easy or too difficult for them. A suggestion was made that since the main point of assessing readability is to match up the reading level of the student with that of the reading material, it would benefit teachers if publishers would publish the readability levels within and between the texts to help teachers in making instructional decisions in planning and modifying their lessons.

The results of Jorgenson's study (1975) clearly indicates the need for published readability levels of component stories within a basal reader to which teachers can refer. He compared teacher experiential judgment of the reading level of basals with the actual grade level formula designations. He found great variation in the ability to judge accurately the difficulty of the paragraphs from different grade level readers within a series. Jorgenson concluded

that "the lack of a stable frame of reference could hypothetically affect reading instruction."

According to Ekwall and Henry (1968), it can take from fifteen minutes to an hour to check the difficulty level of a book by using the current formulas and most teachers don't have the time or experience needed to do this on a large number of books. Providing the readabilities for the stories in a basal would be a time-saving device.

To go a step further, once readability levels are established, editions within the same reading series can be compared to see if significant changes were made by the publisher and if the changes warrant spending the money necessary to acquire new books.

HYPOTHESIS

The present study continues to investigate the readabilities of stories within a basal, specifically the 1979 Open Court readers, and compares them with the previous edition. It is hypothesized that there is no variation between the readabilities of stories within a basal nor between the basal and the grade level for which it is labelled. It is further hypothesized that there is no difference in readability levels between the 1976 edition and the 1979 edition for each grade.

DEFINITIONS AND LIMITATIONS

Open Court is a phonics approach to reading that utilizes letter-by-letter and sound-by-sound learning. Once the

sound is learned, all associated spelling patterns are taught, but introduced orally first (Spache and Spache, 1973).

The reading of stories is delayed until a great amount of phonic knowledge is mastered. There is a heavier vocabulary load especially in the first, second and third readers. The program concentrates on folk literature and fairy tales beginning in the first grade (Chall, 1972).

Children are taught that sound-spellings form words, words form sentences, sentences form paragraphs and so on. It is a multi-sensory, synthetic phonics approach to reading (Open Court, 1979).

The findings of this study and its conclusions are limited in that they apply only to Open Court basals.

The limitations of the use of only the Fry Readability Formula, whose accuracy admittedly falls within one grade level, is also recognized. The study uses only the number of syllables and sentence length as a measure of readability and does not take into account other factors such as syntax, sentence structure, pupil familiarity of words or interest.

PROCEDURES

Open Court basals (1979 editions) from grades one through six were collected. To obtain the readability levels of its stories, the Fry Readability Formula was chosen because it is quick and easy to use (Klare, 1974-1975) and was used in The Foxie Reference to determine the readability levels in the previous editions. Fry (1968) believes his

formula ranks books on a hard-to-easy continuum about as well as the Dale-Chall, Flesch, SRA and Spache formulas, and research justifies this view.

According to Fry's directions (1977), one hundred word samples from the beginning, middle and end of each story in each basal were selected, where possible. Plays and poems were not included, since Fry feels formulas are meant for prose. The number of sentences (to the nearest tenth) and the number of syllables within each one hundred words were counted. All words were counted including proper nouns, initializations and numerals.

Fry's definitions were followed. He says a word is "a group of syllables with a space on either side." A syllable was defined as a phonetic syllable and the number of syllables in the word depended on the number of vowels heard. An initialization or numeral counted as one syllable for each numeral or initial in the cluster. Thus there are 4 syllables in 1945 and 3 for IRA. Symbols were counted as one each, 1 for &. Fry does not mention abbreviations. These were counted the way they would be pronounced as words.

If there was wide variability in the number of sentences and/or syllables in the samples taken from a story, additional samples were included. The averages of the number of sentences and the number of syllables were then computed for each story. These averages were plotted

on the Fry Readability Graph Extended to Level 17 (1977) which gives grade level designations through college. An average readability for each reader was also computed once the readabilities of the stories were determined.

Charts were made indicating the grade placement and name of each basal, the name of the story, page number in which it could be found in the book and grade level according to the Fry Readability Graph. The number of stories below, on and above grade level placement were counted and entered on the chart along with the percentage of total stories they represented on these levels. The average readability of the entire basal and the range of stories within it were also indicated. These grade level designations were compared to those of the 1976 editions as reported in The Foxie Reference.

FINDINGS OF THE STUDY

The readability analyses contained in the 1979 basals can be found in Tables I-IX which list the stories, pages on which they can be found in each text and their readability levels according to the Fry Formula. In addition, each table provides the average readability of the text, the range of stories and the number and percent of stories below, at and above grade level designation.

Of those stories that were analyzed by the Fry Formula (one hundred words or more), as shown in Table I, only

slightly more than half on Level B2 (Table I) were found to be on grade level.

More than three-quarters of the stories on Levels C, D and E (Tables II, III, IV) were above grade level. The average readabilities of these three readers were at least two years above their grade level designations. The readability levels of the stories varied at least five grades within each basal.

TABLE I

READABILITY RESULTS FOR THE GOLD BOOK
LEVEL B2 (GRADE 1)

Stories	Page	Fry Readability Results
The Wolf and the Kids	43	1
The Donkey in the Lion's Skin	47	2
I Painted	80	1
The Eagle and the Crow	87	1
The Fox and the Stork	99	2
The Vain Jackdaw	103	2
The Wolves and the Sheep	107	1

Summary:	Number	Percent
Stories below grade level	0	0
Stories at grade level	4	57.1
Stories above grade level	3	42.9
Average Readability of Text	1.4	
Range of Stories	1 to 2	

It was found that over ninety percent of the stories in Level F and one hundred percent of those in Level G (Tables V and VI) were above grade level and the average readabilities of the two basals were better than two years above

TABLE II

READABILITY RESULTS FOR ON A BLUE HILL - LEVEL C (GRADE 1)

Stories	Page	Fry Readability Results
Goblin Story	3	1
The Little Red Hen	16	1
Beth Learns to Write	22	1
The Story of the Red Envelope	29	3
The Oak Tree	39	4
The Gingerbread Boy	43	4
The Pine Tree	49	1
The Three Billy Goats Gruff	53	3
Everyone Has a Job	58	3
The Tale of a Black Cat	67	4
The Fox and the Grapes	72	1
Little Green Riding Hood	74	2
The Hare and the Tortoise	81	3
The Rich Man and the Poor Tailor	83	4
The Plum Pit	87	3
The Lion and the Mouse	90	5
The Little Engine That Could	94	2
Why the Magpie's Nest Is Not Well Built	99	3
The Three Bears	108	4
The Wishing Book	113	3
Clouds Tell the Story	118	3
Granny and Her Elephant	124	4
Selma Burke	129	5
The Man, the Boy, and the Donkey	136	6
Jane Goodall	140	[illegible]
Dick Whittington and His Cat	148	4
The Garden	154	1
Hill of Fire	161	3
What Makes a Bird a Bird?	173	3

Summary:	Number	Percent
Stories below grade level	0	0
Stories at grade level	6	20.7
Stories above grade level	23	79.3
Average Readability of Text	3.0	
Range of Stories	1 to 6	

TABLE III

READABILITY RESULTS FOR A FLINT HOLDS FIRE
LEVEL D (GRADE 2)

Stories	Page	Fry Readability Results
The Camel's Nose	2	6
The Ants and the Grasshopper	5	2
Sleeping Beauty	9	6
The Bundle of Sticks	15	5
Giacco and His Bean	20	5
A Starry Night	25	2
A Story of a Turnip	29	5
The Happy Robin and the Gloomy Raven	32	4
Birdwatching	35	4
Norma the Caterpillar	40	4
The Dog Gellert	45	4
A Parakeet Named Dreidel	50	5
The Tale of the Clever Deer	55	4
The Wolf and the Seven Kids	59	5
Seeds and Civilization	64	5
The Fox and the Crow	72	2
Hot and Cold From One Mouth	74	3
The Three Wishes	78	5
The Sweet Pudding	84	5
The Ox Who Won the Forfeit	89	3
The Boy and the Worm	98	2
The Bremen Town Musicians	100	5
Christmas Is Coming	108	5
Why the Bear Has a Short Tail	112	3
Androcles and the Lion	118	6
The Milkmaid and Her Pail	122	5
The Quarrel	125	5
The Tale of Peter Rabbit	128	6
The Monkeys	134	4
The Emperor's New Clothes	137	6
The Riddle of the Sphinx	142	5
The Shoemaker and the Elves	148	6
A Birthday Surprise	158	3
Sam	165	3

Summary:	Number	Percent
Stories below grade level	0	0
Stories at grade level	4	11.8
Stories above grade level	30	88.2
Average Readability of Text	4.4	
Range of Stories	2 to 6	

TABLE IV

READABILITY RESULTS FOR FROM SEA TO SEA
LEVEL E (GRADE 2)

Stories	Page	Fry Readability Results
Our Country	2	6
How America Was Discovered	5	6
Pocahontas and Captain John Smith	9	7
The Indians	12	9
The Indians of the East	15	7
The Plains Indians	18	7
The Indians of the Northwest	21	7
Other Indians	23	5
The Pilgrims	25	6
The First Thanksgiving	28	6
Early Explorers of Our Country	32	7
Our Country's Birthday	36	7
How Our Country Became Free	40	8
Lewis and Clark	43	6
Pioneers Go West in Covered Wagons	47	5
The Great Pacific Railroad	50	6
The Real Princess	56	4
The Tardy Teacher	59	6
The Wind and the Sun	62	1
Rumpelstiltskin	66	4
The Adventures of Tom Thumb	73	5
Patrick O'Donnell and the Leprechaun	78	6
Johnny Appleseed	82	7
The Frog Prince	86	6
The Story of Grandpa's Sled and the Pig	92	5
Nathan Hale	100	7
Benjamin Franklin	102	6
How Thomas Jefferson Learned	105	5
America's First Painter	110	7
Harriet Tubman	113	6
Abraham Lincoln	120	7
Ellis Island: The Golden Door	123	5
Our Capital	128	8
Thurgood Marshall	131	6
The American Flag	135	4
Susan B. Anthony	138	7
The First American in Orbit	145	6
Roberto Clemente	148	7
Leontyne Price	152	6

TABLE IV (continued)

Stories	Page	Fry Readability Results
Uncle Sam	156	4
My First Buffalo Hunt	158	6
Tommy and the Old Man	167	3
Summary:	**Number**	**Percent**
Stories below grade level	1	2.4
Stories at grade level	0	0
Stories above grade level	41	77.6
Average Readability of Text	5.9	
Range of Stories	1 to 8	

the grade in which they are being read. A range of five years in reading difficulty of the stories were found to exist within each reader and a total of only three stories were discovered to be on grade level for the entire third grade program.

Over seventy percent of the stories contained in Level H (Table VII) were above grade level and the average readability was more than a year above its grade designation. The fourth grade basal consisted of stories whose readabilities varied as much as eight grade levels.

The overall readabilities of Levels I and J (Tables VIII and IX) matched the grades for which they were intended. However, approximately half of the individual stories in each reader were found to be above the grade levels in which they are to be utilized. The basals' stories spanned eight grades (from primary to high school) in difficulty.

TABLE V

READABILITY RESULTS FOR THE PLACE CALLED MORNING
LEVEL F (GRADE 3)

Stories	Page	Fry Readability Results
The Lion in His Den	3	4
The Deer	5	6
The Great Minu	7	6
The Boy Who Cried Wolf	13	3
Mandy's Grandmother	15	3
The Boy Who Flew Too Close to the Sun	24	5
Love Like Salt	29	3
David and Goliath	34	6
Pinocchio	39	6
Snow White and the Seven Dwarfs	47	6
Winnie-the-Pooh	57	6
Alexander and His Horse	68	4
Cleopatra	71	7
William Tell	75	6
Boadicea	80	7
Mary Queen of Scots	86	7
Father Hidalgo	93	8
The Lady with the Lamp	96	5
Martin Luther King	101	7
The Wonderful Alphabet	106	7
The Invention of Printing	109	7
Copernicus and Galileo	113	7
The Moon	116	7
The Nine Wanderers	120	6
Marie Curie	126	6
Robinson Crusoe	133	6
Winter in the Mountains	143	7
The Dead Tree	147	4
The Judgment of Solomon	151	6
Puss-in-Boots	154	5
Dona Felisa	161	7
Ludwig Van Beethoven A Song in a Silent World	165	6
Rachel Carson	172	8
Margaret Bourke-White	176	7

Summary:	Number	Percent
Stories below grade level	0	0
Stories at grade level	3	8.8
Stories above grade level	31	91.2
Average Readability of Text	5.9	
Range of Stories	3 to 8	

TABLE VI

READABILITY RESULTS FOR CITIES ALL ABOUT
LEVEL G (GRADE 3)

Stories	Page	Fry Readability Results
The World and Its People	2	7
How the World Looks	4	7
Europe	10	8
The British Isles	14	7
King Arthur	23	6
France	29	7
Beauty and the Beast	37	5
Germany	45	6
Siegfried and the Dragon	53	5
The Soviet Union	59	7
The Snow Maiden	66	5
Greece	72	7
The Story of the Wooden Horse	78	5
Italy	84	8
Romulus and Remus	90	6
Africa	99	9
Makulu	107	4
Asia	115	8
The Holy Land	117	7
The Story of Noah and the Ark	123	7
India	128	8
The Blind Men and the Elephant	135	4
China	138	7
The General and the Arrows	143	5
Australia	148	7
Antarctica	156	6
South America	159	8
North America	169	8
Mexico	171	7
Cortes and Montezuma	176	7
Canada	180	8
Madeleine of Castle Dangerous	185	7
Home Again	190	8
The Dutch Boy and the Dike	196	6
The First Trip Around the World	202	8
The Story of Issumboshi	206	6

Summary:	Number	Percent
Stories below grade level	0	0
Stories at grade level	0	0
Stories above grade level	36	100
Average Readability of Text	6.6	
Range of Stories	4 to 9	

TABLE VII

READABILITY RESULTS FOR BURNING BRIGHT
LEVEL H (GRADE 4)

Stories	Page	Fry Readability Results
Harry and the Whatzit	2	3
The Long-Lost Coelacanth	6	5
Amapola and the Butterfly	10	6
Monster Animals	14	6
How the Farmer's Wife Took Care of Things	20	4
Dragon Stew	29	6
Polly's Tiger	40	6
About Dolphins	52	3
Blue Moose	56	3
An Interrupted Friendship	64	9
The Surprise Party	71	6
The Bat, the Birds, and the Beasts	80	4
Zuckerman's Special Pig	83	5
The Story of Pauline	92	3
Prometheus	96	7
Trina	99	3
How the Camel Got His Hump	106	5
Benjamin Franklin Changes the World	110	7
First Woman Jockey	118	6
Memories	125	4
Hawaii	131	10
Come Away, Come Away	138	5
Leonardo's Strange Dream	145	7
How Birds Fly	148	7
The Horse That Flew	154	7
Sumi's Prize	159	5
Let's Make a Kite	167	3
Ondine	173	6
The Art of Henri Rousseau	188	7
The Rooster That Understood Japanese	192	6
The Peterkin Papers	201	7
Anna's Silent World	207	7
Santiago's Silver Mine	211	4
New Land, New Ways	222	7
The Mouse and the Motorcycle	226	4
Ruth and Naomi	231	7
The Cowardly Lion	234	6
Remembering Last Summer	244	5

TABLE VII (continued)

Stories	Page	Fry Readability Results
The Fisherman Who Needed a Knife	252	4
Demeter and Persephone	259	7
The Turn of the Year	264	6
The Chippewa	271	7
Kevin Cloud	273	3
Inventions That Changed the World	277	8
A Trip Through the Night	284	6
The Fox and the Cat	295	5
Joseph and His Brothers	296	6
Penny Savings Bank	304	5
The Runaway Cow	311	7
Father of the Symphony	319	7
Petronella	327	4
The Glittering Cloud	344	4
The Big Wave	356	4
Krakatoa	366	7
Our Enemy the Flea	370	5
Some Adventures of Flat Stanley	374	6
Payday	386	7
Bowl Game	394	6
Atalanta and Hippomenes	397	7
Contest Fever	401	4
A Good Time	409	5
A Mad Tea Party	417	6
Fiesta Time in Mexico	428	8

Summary:	Number	Percent
Stories below grade level	7	11.1
Stories at grade level	10	15.9
Stories above grade level	46	73.0
Average Readability of Text	5.7	
Range of Stories	3 to 10	

Fewer discrepancies, as noted in Tables V, VI, VII, VIII and IX between the average readability and grade designations were found in the 1978 Open Court basals for the middle grades as a whole, but the primary grade basals can be

TABLE VIII

READABILITY RESULTS FOR THE SPIRIT OF THE WIND
LEVEL I (GRADE 5)

Stories	Page	Fry Readability Results
Why Mosquitoes Buzz in People's Ears	2	4
What Is a UFO?	12	7
Amelia Earhart's Last Flight	16	7
Settling In	21	5
The Lost Colony	31	7
Basil and the Case of the Counterfeit Cheese	40	6
At the Bottom of the Sea	48	6
See Along the Shore	56	5
Escape to Freedom	60	5
Shipwreck	72	4
The Coral Reef	80	6
Sunday for Sona	87	5
A Successful Halloween	96	6
Secret Codes and Private Post Offices	101	6
Two Fables	104	4
A Man Who Made Use of His Shadow	106	7
Mouse Woman and the Tooth	112	6
Phoebe and the General	121	6
The Mountain of Tears	131	6
Grandma's Secret	138	4
Cap'n Salt Outwits the Wolf	145	7
The Soup Stone	150	4
Matter, Matter, Everywhere	154	7
Fragrance of Ghosts	160	7
A Mysterious Disappearance	168	6
Echo and Narcissus	179	6
Shooting Stars	181	8
At Home in America	187	7
Pinocchio	192	6
Crystals	200	7
The Hand of Friendship	203	4
Meet the Computer	216	7
McBroom the Rainmaker	221	4
The Story of Deborah	232	7
Lu Pan	235	6
The Ant and the Grain of Wheat	240	4
The Absent Present	242	5
The Army of Two	248	7

TABLE VIII (continued)

Stories	Page	Fry Readability Results
Across a Continent	252	9
Make Hay While the Sun Shines	262	6
Four-Legs	270	4
Joker	281	5
Crickets	288	5
The Singing Tortoise	291	4
A Name for a Kitten	296	5
Janet Reachfar and Chickabird	300	6
Reindeer	308	8
The Bulls of Altamira	314	8
The King of Soccer	327	7
Baucis and Philemon	334	7
Shoeshine Girl	338	2
What Is Music?	348	8
New Friends and Old	354	4
Lilliann Der	360	5
Duke Pishposh of Pash	364	5
The Swallow and the Other Birds	371	4
The Queen's Croquet Ground	372	6
The Dream Runner	382	3
Jorinda and Joringel	387	6
Maria's Comet	392	5
The Art of Marc Chagall	396	7
Plain Old Grace Jones, Farewell!	401	4
The Nightingale	412	6
Theater of the Night	418	6

Summary:	Number	Percent
Stories below grade level	16	24.6
Stories at grade level	11	16.9
Stories above grade level	38	58.5
Average Readability of Text	5.6	
Range of Stories	2 to 9	

seen to have much higher readabilities than the publisher's intended grade level usage.

The study was also conducted to compare the 1976 editions of the Open Court Reading Series to the newer 1979

TABLE IX

READABILITY RESULTS FOR CLOSE TO THE SUN
LEVEL J (GRADE 6)

Stories	Page	Fry Readability Results
Seagoing Bottles	2	7
Prairie Farm	11	7
A New Beginning	17	4
The Radio Tooth	28	7
The Donkey and the Dog	41	6
On the Island of the Blue Dolphins	44	6
Mary's Monster	53	6
Coyote Cry	60	6
Mystery of the Loch Ness Monster	74	6
Zoo	82	8
Case of the Missing Turkeys	85	6
Theseus and the Minotaur	100	6
Well Done, Sybil Ludington	107	6
Two Tickets to Freedom	113	6
In the Middle of the Night	122	4
Arrietty's Expedition	138	6
Underground Waterways	146	9
The Fire on the Mountain	152	7
The Hen and the Pearl	159	7
Sequoyah and the Talking Leaves	160	8
Black Beauty's Midnight Ride	165	4
The Tower of Babel	170	6
Invisible Walls	176	6
How I Learned	186	7
The Toothpaste Millionaire	192	7
The House in the Forest	202	6
Conversations with a Chimpanzee	210	10
David in Silence	220	4
Maria Tallchief: Prima Ballerina	233	10
Raymond's Run	241	7
The Left-hander's World	250	7
A Fish for Finn	255	5
To the Rescue	263	4
The Last of the Dragons	270	7
Fay Gow - A Boy of Hong Kong	280	3
The Little Prince	288	5
The Pageant	295	5
The Miser	306	6
Talk	316	3

TABLE IX (continued)

Stories	Page	Fry Readability Results
Michael Faraday's World	320	9
Alexandra the Rock-Eater	331	4
Weird and Wacky Inventions	345	8
Raw Monkey Liver	354	7
Gram Remembers	358	5
Snow Magic	365	4
The Mystery of the Maya	371	8
How Baseball Began in Brooklyn	381	4
School Days in Old New England	389	8
Kate Shelley and the Midnight Limited	396	7
The Gliding Horse	403	9
Athene's City	407	8
One Day in Ancient Rome	412	7
The Death of Two Cities	422	7
The Second Voyage of Sinbad	429	7

Summary:	Number	Percent
Stories below grade level	14	25.9
Stories at grade level	14	25.9
Stories above grade level	26	48.1
Average Readability of Text	6.3	
Range of Stories	3 to 10	

Headway editions to determine if the publisher had revised the material to make it more compatible with the grade levels for which they were designed. Table X shows the comparison by formula results of the average readability of each basal in the 1976 and 1979 editions. The primary level texts show no change in readability levels, but the middle grade text results indicate the basals have been made easier to read since the readabilities of the stories in the fifth and sixth grades dropped about one year and two years respectively and have been brought in line with their grade level placements.

TABLE X

A COMPARISON OF THE AVERAGE READABILITIES
OF 1976 AND 1979 OPEN COURT BASALS
GRADES 1-6

1976 Edition Book Level	Average Readability	1979 Edition Book Level	Average Readability
1	1.8	B2	1.4
1^2	3.1	C	3.0
2^1	4.5	D	4.3
2^2	5.9	E	5.9
3^1	5.8	F	5.9
3^2	6.7	G	6.6
4	6.4	H	5.7
5	7.0	I	5.7
6	7.6	J	6.3

CONCLUSIONS AND IMPLICATIONS

The Fry Readability Formula is identified as establishing a result which is accurate within a year of the true readability of a text. If all of the results of this analysis were lowered by a year, readability levels for the primary grade basals would still be considerably above the publisher grade designations for the readers in the 1979 Open Court Headway Series. The results of this investigation indicate that a large number of stories are inappropriately placed in the series. An average of over seventy-eight percent (78.85) of the stories are above grade level designations with one text, level G, grade 3,

containing no stories at or below grade level. In comparing the 1976 and 1979 editions, as can be seen in Table X, it would appear that the publisher did not change the stories in the primary grade books or lower their difficulty levels, therefore the average readabilities of both editions at this level were about the same. These results agree with those of Williams' study (1979) that only some books in a series agree with the publisher's grade level designations. However, it appears that Open Court did make some effort to lower the readability levels of the middle grade books. The emphasis, or philosophy, of the publisher on a high vocabulary load in the primary grades may be responsible. Nonetheless, an average readability range of two to three and a half years above grade placement for these books seems extreme. The publisher should seriously consider lowering the difficulty of the primary grade texts.

Since differences in average readability levels were found between the 1976 and 1979 editions only for basals labelled for grades four through six, the hypothesis of this study that there is no difference in readability levels between the 1976 and 1979 editions, is only partially rejected.

Although many criteria should be used in rating reading matter for students, it should be recognized that formulas provide a practical, objective way of estimating reading ability needed to handle the material. Teacher judgment, by itself, has been found to be unreliable. Past research

(Jongsma, 1972; Jorgenson, 1975) has indicated that teachers and librarians cannot carry out the task of assessing readability solely on the basis of professional judgment. Using experience in the field as a method has been found to be inaccurate and there has been little agreement among educators as to the degree of difficulty of the literature.

The problem of readability assessment has been compounded not only by publishers who make texts too difficult for the grades in which they place them, but by teachers who naively trust the designations of these books to be accurate and reliable. The wide variations in readability levels of stories contained in the 1979 Open Court basals indicate how misleading a book's grade level designation can be. The hypothesis that there is no variation between the readabilities of stories within a basal or between the basal and its grade level designation is rejected since a great deal of variability was shown to exist in every basal examined in the Open Court series. Eberwein (1979) found similar variations in the basals of three reading series he investigated. He and Britton and Lumpkin (1972) believe in the necessity of published readabilities of component stories. This author concurs based on the findings of this study.

Educators must take the initiative. It is imperative that teachers rely not on publishers but on themselves. They must learn to use formulas to calculate the difficulty of individual stories so that this awareness can guide them

to a more effective utilization of books when carrying out prescriptions for individualized instruction.

Reading material must match the pupils for whom they are intended if the act of reading is to result in comprehension of the printed matter. How do we determine what makes a book readable and how are these factors measured? Many articles and studies have been reported in the past twelve years dealing with readability and readability formulas in an attempt to answer these questions and to determine the value of formula use.

What is Readability?

Hittleman(1973) considers readability to be "a 'moment' at which time the reader's emotional, cognitive, and linguistic backgrounds interact with each other, with the topic, and with the proposed purposes for doing the reading, and with the author's choice of semantic and syntactic structures." He believes that using word and sentence length as determiners of readability is dangerous. Many long sentences are more readable than they would be if shortened; shortening sentences can make them lose meaning. He and Spache(1970) agree that meanings of words in context, the reader's experience with the meaning, idiomatic expressions and the word's possible abstractness must be considered in determining its readability. Formulas do not reflect these conceptual difficulties.

Hittleman reviews Chomsky's transformational theory of grammar which attempts to measure the difference between the readability of different sentence transformations. He also

reviews the semantic theory which determined that sentence understanding is mainly more a function of meaning that of grammar. Hittleman believes future research should concentrate on the development of his definition of readability, for example the suggested elements relative to the "moment" and these elements should be evaluated through quantitative measurements.

Dechant(1970) agrees that readability involves an interaction between reader and book but he feels the communication between the writer and the reader is rarely perfect, so readability cannot be absolute, but is a matter of degree. (One would assume that the interaction referred to is among the elements at the "moment" mentioned by Hittleman.) Dechant continues to say that practical decisions as to the comprehension necessary to consider a book readable by a specific child, must be made by teachers. A book may be readable to one child and not another although both may generally have the same level of reading ability. Teachers make individual prescriptions for individual children and not one prescription for an "average" child, so this fact must be considered.

Factors of Readability Formulas

What factors do readability formulas measure? Klare(1974-1975) in the Reading Research Quarterly presents a history of formulas. Most formulas measure word and sentence length and Klare describes the development of these

from the complex and time-consuming calculations of Lorge to the simple Fry Readability Graph. A few formulas such as the Aquino Formulas and that of Botel and Granowsky try to measure linguistic variables or syntactic complexity. Formula corrections and those designated for specialized material (science and foreign languages) and computers are also discussed. Klare recommends the use of a simple two-variable formula, preferably a word or semantic variable and a sentence or syntactic one. In his view, more complex formulas should be used only for research.

Maxwell(1978) also delves into the history of readability formulas. She notes the fact that none of the formulas really consider semantics or syntax. The Taylor "cloze" test is the exception but it is more time-consuming than the others. She suggests that for formulas to be of any value one must be aware of their limitations.

McLaughlin(1968) feels that word and sentence length have the greatest predictive power as linguistic measures. They are indicators of semantic and syntactic sources of reading difficulty. According to McLaughlin, in the English language word length is associated with precise vocabulary. Long sentences nearly always have complex grammatical structure. He believes that counting out a fixed arbitrary number of sentences and then counting the number of syllables within them is enough to assess the reading difficulty of a passage.

Vaughan(1976) believes classroom teachers, especially in the content areas, are using readability formulas more and more. There have been revisions of old formulas and new ones are being devised at a great rate. Formulas used to be difficult to administer, but the Fry Readability Graph has made assessing readability easier. With the increased use of easier formulas by people other than publishers and reading researchers, Vaughan feels it is important to know the predictive validity of the formulas used in order to interpret their grade level designations correctly. He compares Fry, Dale-Chall and SMOG formulas. The predictive criterion of Dale-Chall and Fry is of 50 to 75% comprehension and SMOG's is of 90 to 100% comprehension. Vaughan points out that this difference in criterion scores creates problems for interpreting the results of the formulas if the criterion scores are not examined. Dale-Chall and Fry agree with each other but neither agrees with SMOG. This does not make SMOG inaccurate. Teachers must understand that these formulas should disagree and why. The SMOG formula may be more desirable to use for students who are expected to learn from materials on their own and is most applicable in content area homework assignments.

Limitations of Formulas

Hittleman(1976) discussed the limitations of formulas in his report at the Sixth World Congress on Reading. He believes the major shortcoming of formulas is that they don't

consider difficulty caused by concept load, format of material, organization of ideas or writing patterns. The altering of syntax is not considered when formulas merely count sentence length. Hittleman prefers the use of a cloze procedure as a means for estimating the readability of materials. This would consider the interaction between the readers, the material and the reading situation. He feels that cloze is an accurate measure of readability even though it isn't a predictor of it. In his opinion, it is more reliable than estimates of readability obtained by use of standard formulas.

Marshall(1979) agrees with Hittleman that readability formulas count only sentence length. She believes the content and the context in which the words are used are not considered and neither is the relationship between the content and the knowledge of the reader and so readability formulas fail to measure meaning. "Comprehensibility and readability are not interchangeable terms."

Advantages of Formulas

Pauk(1969) discusses the ease of calculations and the saving of time as the advantages of newer readability formulas. He compares them with each other and discloses the results of research that students in his methods course did on the Fry and Dale-Chall formulas and the McLaughlin SMOG Grading. Fry and Dale-Chall yield grade levels closer to each other than to SMOG. There is wide variance between

the SMOG Grading and Dale-Chall. It was noted (as it was in Vaughan's article) that this is true because of the different criteria of the two formulas. Pauk mentions that Dale-Chall and Fry both use two variables whereas McLaughlin's SMOG Grading has one factor. Pauk's students, however, reject the simpler formulas for the more complex and accurate Dale-Chall formula.

The use of formulas does not account for students' differing interests in the reading material or their experience with the topic. Many criteria for judging or rating materials should be considered including the format of the book, literary form, content and author's style, according to Koenke(1971). However, he considers the practicality of readability formulas as being an advantage in their use. He believes the quicker, simpler formulas are good classroom tools to be used when time is of the essence. Different formulas are needed for different situations. He mentions the need to know the order of difficulty of selections within a unit in a text as one of the times when quick formulas are necessary. Koenke contrasts this with being on a committee to compare and select textbooks for a school or in doing research as times when more complex formulas might be used.

Spache(1968) agrees with Koenke that formulas provide a practical estimate of the reading ability necessary for use of a book. He believes the information the formula provides may be significant in dealing with poor readers.

A Need for Formulas

It has been recognized for a long time that a way of assessing readability is necessary, something that could act as a guide in deciding the appropriate material for a particular reader. Dechant(1970) feels that teachers and librarians are not good at judging and designating the grade level for which a book was written. He believes that the more than thirty readability formulas that have been developed since early in the century are useful in giving teachers and others a relative estimate of the difficulty of books and in detecting difficult words and sentences.

The following studies indicate the need for readability formulas. The first was done by Eugene Jongsma(1972) in which he used five formulas to determine the actual readability level on each of twelve Newbery Award Books from 1958-1969. The research compares the levels with librarians' judgments. The overall results conclude that there is little if any difference between the average of the one hundred librarians' estimates and the formula results. However, there was a great deal of variation among estimates and the school librarians tended to rate the books more difficult than the public librarians. Judgments of the difficulty of a single book varied from three to nine grade levels. Jongsma modeled this study after that of Russell and Merrill done in 1951, in which inconsistencies were found in librarians' judgments, too.

Britton and Lumpkin(1977) researched the accuracy with which publishers report readability levels of their reading texts. They tested five current sixth grade reading series, story-by-story, using Fry, Harris-Jacobson, Dale-Chall and Flesch readability formulas. All formulas were applied to the same one hundred word sample passages taken from each story. The results show that it is impossible to verify the publishers' levels, because stories are not arranged in order of difficulty and sample passages are not identified by the publishers. Many average readabilities are provided by the publishers, but it cannot be determined on what stories these averages were computed. It is recommended that all stories have readability analyses using several formulas and these be provided by the publishers so teachers can individually prescribe for their students.

Williams' study(1979) to determine reading levels of three different math texts in grades one through six used the Fry Readability Graph with Magginnis' formula for passages shorter than one hundred words. Her reason for the study was that some children do not understand math language, specifically sentences or word problems. She found that only some of the books in each series agree with its grade level designations. She concluded that most books are too hard for the average and low-achieving child. The results imply the need for teacher awareness concerning adjustments in teaching

lessons to meet individual differences and the need to check on the readability of texts before their selection and purchase.

Eberwein(1979) in a recent study to discover what teachers know about the readability of their basals disclosed that teachers assume there is little variability in the readability levels of a basal. In actuality, great variations in readability levels were discovered in three reading series evaluated. The study further revealed teacher surprise at this discovery and showed that once teachers were made aware of this knowledge, they were anxious to use it to help their students with difficult parts of the basal. In their ignorance, they were asking students to read passages too easy or too difficult for them. A suggestion was made that since the main point of assessing readability is to match up the reading level of the students with that of the material, it would be beneficial if publishers would make known the readabilities within and between the texts as this would help teachers to plan and modify lessons. Eberwein points out that as naive as it would be to use readability formulas as the only criterion for identifying appropriate reading material, it would be equally naive to ignore readability when making decisions about classroom instruction.

Ekwall and Henry(1968) add that providing the readabilities for the stories would be a time-saving device, as well. It takes from fifteen minutes to an hour to check the

difficulty level of a book using the current formulas and most teachers don't have the time and experience needed to do so.

The results of Jorgenson's study(1975) indicates the need for published readabilities of component stories within a basal reader, too. Concerning the readability level of basals, he compared the experiential judgment of teachers with that of the actual formula designations. Great variations were found in the ability to accurately judge the difficulty of the paragraphs from different grade level readers within a particular series. He concluded that "the lack of a stable frame of reference could hypothetically affect reading instruction."

Fox(1979) published The Foxie Reference which addresses itself to the need for published readability levels of component stories in a basal expressed by Ekwall and Henry(1968) and Jorgenson(1975). It provides the elementary school teacher with a guide to the readabilities of stories in 32 basal reading series published from 1970-1978. The readabilities are obtained from the Fry Readability Formula. Information is presented as to number and percent of stories below, on and above grade level placement within each basal, their readabilities by Fry Formula, the average readability of each basal and summary graphs of the series for a quick overview.

Fry(1975) believes that using a formula is not enough to determine what book is good for a particular child. It

should be used in combination with the pupil's interest and motivation. These are important factors. If a child's interest and motivation are high enough, he/she could overcome the high readability level of some materials. Fry's readability principle states that although this fact may be true, conversely low motivation makes it necessary to use books on a low readability level. To increase reading ability and get students to practice reading, high interest, low readability level books need to be used.

The Fry Readability Formula and Graph

In the article "A Readability Formula That Saves Time," (Fry,1968) directions are given for the use of the Fry Readability Graph. It is a simple formula which plots on a graph the average of three one-hundred word samples within a story or book, in order to obtain its grade level designation. Within each one hundred words, the number of sentences (to the nearest tenth) and the number of syllables are counted. Fry reports the accuracy of its use to be within one grade level. He believes his formula ranks books on a hard-to-easy continuum about as well as the Dale-Chall, Flesch, SRA and Spache formulas, and studies back him up on this view. He discusses the difficulty of validating his grade level designations. Publishers and educators seem to agree based on experience and test data as to what the designations mean. Fry considers the problem as being complicated

since test data is not exact; newer tests are harder and subjective "judgments" are about as good a standard as can be found.

Fry(1969) justifies the use of his readability graph at the primary level. He reports on grade level scores for seven books in the primary range and compares his formula results with the Spache formula, oral cloze procedure and oral reading errors. He feels that all four methods rank the difficulty level of passages quite well. Cloze was the most accurate and made the finest distinctions, but you can't make comparisons with cloze error scores because the reading abilities of the children who use the procedure will change over a period of time. Oral reading scores are not as accurate and are also subject to a time factor. Spache and the Fry readability formulas yield the same grade level scores, but the Spache formula is inconsistent on a story with the other methods and cannot rank above fourth grade. Its ranking to one-tenth of a grade is also misleading, according to Fry, since the probable error mentioned by Spache is 3.3 months. This makes it rather impossible to get within a tenth of a grade level with the formula. Fry does admit that Spache and Fry formulas correlate very high with cloze and satisfactorily with the oral reading method and each other.

Fry(1977) extends his graph to the college level. The college year areas are based on the average area for the previous three years. He discusses the inclusion of proper nouns not previously counted, in an article that clarifies

and validates his graph. He admits the contribution of proper nouns to the difficulty of the material and the fact that without them the graph's grade level designations are a little on the low side compared with other formulas. He cites the Britton and Lumpkin study(1977) as supporting the need for including them. To overcome trouble in counting syllables, he suggests that you go by speech sounds, believe what you hear not what you see. He reviews his definition of a word as being a symbol or group of letters or numbers without a space between them.

Fry feels his formula is modestly accurate and reliable because it consistently correlates well with other formulas. This fact has been validated by several studies he mentions.

Controversy Over Fry Formula

Kretschmer(1976) does not believe that counting the number of syllables in a difficult word is the correct way to estimate vocabulary difficulty. Some difficult words are small and other easy words have two and three syllables. He feels the easy words can cause more of a problem because of their frequency of use, and this can inflate the count. Kretschmer believes the way Fry's formula is used perpetuates this problem. He offers a correction which is a list of fifty basic words of two and three syllables to be counted as only one syllable. The list is compiled from seven basic word lists. He discusses a study he did and reported on several months before this article, in which three passages

were counted the old way and the new and applied Dale-Chall, Spache and Fry formulas on them. He found that with his correction, Fry's formula was brought more in line with the other two. He concludes that a very basic word wouldn't appreciably add to the reading difficulty of a passage even if it is multisyllabic.

In Fry's reply to Kretschmer's allegations(1977), he states that adding a set of vocabulary words to be consulted complicates the graph's use. He is not convinced and feels modifications shouldn't be used unless it can be demonstrated that this correction will significantly improve accuracy.

In Hittleman's opinions on readability formulas(1973), he expresses his disdain for general lists of familiar words to be consulted. What is considered familiar? Is policeman more familiar than cop? Dale's list has policeman on it. Does that mean using cop in a passage will make it more difficult to read? Hittleman doubts it. It depends on the reader's experience with the word. Perhaps this is why Fry counts all words and doesn't worry about familiarity.

Summary

It is generally recognized that there are many aspects of readability and readability formulas do not measure all of them. Caution must be exercised in their use and users of readability formulas must be aware that they provide only one measure of information needed in selecting the appropriate material for a particular reader. There are, however, many

advantages to using formulas, especially the newer ones. They are time-saving devices that help guide teachers, librarians and others in selecting materials for a grade or school and for modifying and planning instruction for individual children.

Studies have revealed that knowledge gained by teachers and librarians from their experience in their respective fields is insufficient in judging the level of reading difficulty of a book. Publishers do not help by providing sufficient data on the readability levels of their texts.

The research has significantly stressed the importance of aiding educators by supplying them with a quick reference which could be used to find the grade level designations of component stories within their basals.

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